527 CMR 18.00: FLAMMABLE LIQUIDS IN BULK PLANT LOADING AND UNLOADING FACILITIES

Section

18.01: Definitions

(1) For the purpose of 527 CMR 18.00, the following terms shall have the meanings respectively assigned to them:

Approved, approved by the Marshal.

Bulk Plant shall mean that portion of a property where flammable or combustible liquids are received by tank vessel, pipe lines, tank car or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipe line, tank car or tank vehicle.

Flammable Liquid, any liquid normally in a liquid state which, when heated to a certain degree of temperature, will emit a vapor which will ignite by flame or spark. In 527 CMR 18.00 flammable liquids are divided into the following classes:

Class A (highly flammable liquids), any flammable liquid having a flash point below 100°F, to be ascertained by any standard closed-cup instrument.

Class B (less flammable liquid), any flammable liquid having a flash point of not less than 100°F nor higher than 187°F to be ascertained by any standard closed-cup instrument.

Class C (relatively safe flammable liquids), any flammable liquid having a flash point above 187°F to be ascertained by any standard closed-cup instrument.

Marshall, the State Fire Marshall.

Tank Car, a cargo tank mounted on a railroad chassis.

Tank Truck, any single self-propelled motor vehicle equipped with a cargo tank mounted thereon, and used for the transportation of flammable liquids.

Tank Vehicle, any tank truck, or tractor and tank semitrailer combination.

Valves. Valves used for the final control for filling tank vehicles shall be of the self-closing type and manually held open except where automatic means are provided for shutting off the flow when the vehicle is full or after filling of a preset amount.

(2) Separation of Facilities. Tank Vehicle and Tank Car loading or unloading facilities shall be separated from above ground tanks, warehouses, other plant buildings or nearest line of adjoining property that may be built upon by a distance of 25' for Class A liquids and 15' for Class B and Class C liquids measured from the nearest position of any fill spout. Buildings for pumps or shelters for personnel may be a part of the loading or unloading facility.

780 CMR shall not apply to loading or unloading facilities in existence prior to the effective date of 527 CMR 18.00 unless the continued use of such facility, in the judgment of the head of the fire department, would constitute an undue fire or explosion hazard.

(3) Separation of Equipment. Equipment such as piping, pumps and motors used for the transfer of Class A liquids between storage tanks and the fill stem of the loading rack shall not be used for the transfer of Class B or Class C liquids.

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(5) Static Protection.

(a) Bonding facilities for protection against static sparks during the loading of tank vehicles through open domes shall be provided where Class A or Class B liquids are loaded, or where Class C liquids are loaded into vehicles which may contain vapors from previous cargoes of Class A or B liquids.

(b) Protection as required in 527 CMR 18.01(5)(a) shall consist of a metallic bond wire permanently electrically connected to the fill stem or to some part of the rack structure in electrical contact with the fill stem. The free end of such wire shall be provided with a clamp or equivalent device for convenient attachment to some metallic part of electrical contact with the cargo tank of the tank vehicle.

(c) Such bonding connections shall be made fast to the vehicle or tank before dome covers are raised and shall remain in place until filling is completed and all dome covers have been closed and secured.

(d) Bonding as specified in 527 CMR 18.01(5)(a), 18.01(5)(b) and 18.01(5)(c) is not required where vehicles are loaded exclusively with products not having a static accumulating tendency such as asphalt, most crude oils and residual oils and water soluble liquids.

(e) Filling through open domes into the tanks of tank vehicles or tank cars that contain vapor air mixtures within the flammable range or where the liquid being filled can form such a mixture, shall be by means of a downspout which extends near the bottom of the tank. This precaution is not required when loading liquids which are non-accumulators of static charges.

(f) When asphalt, crude oils, residual oils or other distillates are loaded into any tank vehicle or tank car which last contained liquids capable of forming vapor air mixtures within flammable range at or below normal ambient temperatures the extended downspout referred to in 527 CMR 18.01(5)(e) shall be required and flow rate shall be restricted until the downspout opening is submerged.

(g) Tank car loading facilities where Class A liquids are loaded through open domes shall be protected against stray currents by bonding the pipe to at least one rail and to the rack structure if of metal. Multiple lines entering the rack area shall be electrically bonded together. In addition, in areas where excessive stray currents are known to exist, all pipe entering the rack area shall be provided with insulating sections to electrically isolate the rack piping from the pipelines. No bonding between the tank car and the rack or piping is required during either loading or unloading of Class C liquids.

(6) Buildings.

(a) Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants being trapped in the event of fire. The head of the fire department may designate the number and location of such exits.

(b) Rooms in which Class A liquids are stored or handled shall be heated only by means not constituting a source of ignition such as steam or hot water. Rooms containing heating appliances involving sources of ignition shall be located and arranged to prevent entry of flammable vapors.

(c) Ventilation shall be provided for all rooms, buildings or enclosures in which Class A liquids are pumped or dispensed. Design of ventilation systems shall take into account the relatively high specific gravity of the vapors. Ventilation may be provided by adequate openings in outside walls at floor level, unobstructed except by louvers or coarse screens. Where natural ventilation is inadequate, mechanical ventilation shall be provided and installed in accordance with NFPA 91.

(7) Electrical Equipment.

(a) All electrical equipment and wiring shall be of a type specified by and installed in accordance with the provisions of the Massachusetts Electrical Code, 527 CMR 12.00. Special attention is directed to 527 CMR 5.00.

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(b) 527 CMR 18.01(7)(a) shall apply to areas where Class A liquids are stored or handled. For areas where Class B or Class C liquids only are stored or handled, the electrical equipment may be installed in accordance with the provisions of the Massachusetts Electrical Code, 527 CMR 12.00, for ordinary locations.

(c) Class A liquids shall not be handled, drawn or dispensed where flammable vapors may reach a source of ignition. Smoking shall be prohibited except in designated safe areas approved by the head of the fire department. Conspicuous signs with the words "NO SMOKING" in block letters four inches in height shall be posted in all areas where the hazard from flammable vapors may be expected to be present.

(8) Drainage and Waste Disposal.

(a) Provisions shall be made to prevent flammable or combustible liquids which may be spilled at loading or unloading points from entering public sewers and drainage systems or natural waterways. Connections to such sewers, drains or waterways by which flammable or combustible liquids might enter shall be provided with separator boxes or other approved means whereby such entry is precluded. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers but shall be stored in tanks or tight drums outside of any building until removed from the premises and disposed of in a manner satisfactory to the head of the fire department. The head of the fire department shall be guided by the Hazardous Waste Regulations of the Division of Water Pollution Control, Water Resources Commission Pamphlet 6672, Promulgated by the Mass. Dept. of Public Health.

(9) Fire Protections.

(a) Suitable fire control devices such as small hose or portable fire extinguishers of not less than 20-BC rating shall be available to locations where fires are likely to occur. The head of the fire department may order additional fixed fire protection equipment for loading rack areas. Additional fire control equipment may be required where a tank of more than 50,000 gallons individual capacity contains Class A liquids and where an unusual exposure hazard exists from surrounding property. Such additional fire control equipment shall be sufficient to extinguish a fire in the largest tank. The design and amount of such equipment shall be in accordance with approved engineering standards.

(b) When overhead sprinkler systems are installed at loading racks they shall be designed to actuate by means of a flame detector located over each bay or by an approved thermal detector provided the efficiency of such a detector is not affected by normal ambient temperature changes.

(c) Suitable hand hose attached to a water supply shall be provided for the manual wash down of spills in the loading area.

(10) Damage Protection.

(a) Access to loading bays shall be controlled by concrete bumpers or pipe guide rails so that no part of any vehicle entering the bay can come in contact with the loading structure or its equipment.

(b) Sufficient clearance shall be provided under top loading facilities and its related structure to allow for the highest vehicle expected to pass through the structure.

18.02: Bottom Loading Facilities

(1) Specification of 527 CMR 18.01. 527 CMR 18.01 shall apply to Bottom Loading Facilities unless specifically excluded or clearly nonapplicable.

(2) Control Valves.

(a) Control valves shall be installed to automatically provide for an initial slow opening rate of flow prior to attaining full rate of flow.

(b) Maximum-rate-of-flow controllers shall be incorporated to limit the maximum rate at which the meter is to be loaded.

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(c) Slow closing rate of flow shall be incorporated to minimize line shock and may be accomplished by use of control valves, quantity presets, or both.

(d) Bottom loading assemblies shall incorporate a dry break coupling connection to the truck compartment with interlocking connections so that the valve cannot be opened until the connection is locked to the adapter and cannot be disconnected until the valve is closed.

(3) Damage Protection.

(a) Loading couplers shall incorporate a fracture point in the coupler itself to prevent damage to the vehicle connection if vehicle is moved prior to disconnecting the loading assembly.

(b) Provisions shall be made to keep bottom loading assemblies and equipment from extending into traffic lanes when not in use.

18.03: Referenced Publications

Documents or portions thereof that are referenced within 527 CMR 18.00 shall be considered a part of the requirements of 527 CMR 18.00. Refer to 527 CMR 49.00 for a complete listing of all documents referenced in 527 CMR.

REGULATORY AUTHORITY

527 CMR 18.00: M.G.L. c. 148, §§ 9 and 10.